

KIRTLANDIA

THE CLEVELAND MUSEUM OF NATURAL HISTORY

CLEVELAND, OHIO

DECEMBER 28, 1967

NUMBER 1

A NEW MARINE MEMBER IN THE CONEMAUGH GROUP OF OHIO

James L. Murphy and Larry Picking

*Case Western Reserve University and
West Virginia Department of Highways*

ABSTRACT

A previously unreported marine limestone from the Conemaugh Group, Pennsylvanian, of Ohio is described as a new stratigraphic unit, the Noble Limestone Member. The type section is designated as the shale pit of the Ava Brick Co., in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 31, Buffalo Twp., Noble Co., Ohio. The position of the new unit is between the Ewing and Rock Riffle Limestones. At two localities the Noble Limestone overlies a thin carbonaceous deposit and an underclay which may represent the Upper Bakerstown Coal and Clay. Fossils collected from the new member consist for the most part of bryozoans, brachiopods, and dissociated crinoid plates and stems. It is suggested that an unnamed marine shale that overlies the Upper Bakerstown Coal in the vicinity of Bakerstown, Pennsylvania may be the stratigraphic equivalent of the Noble Limestone.

A previously undescribed marine unit in the Conemaugh Group, Pennsylvanian, of Ohio was discovered in the spring of 1966 by Murphy and Mr. Harry Izenour of Salem, Ohio. The name Noble Limestone Member is here proposed for the new unit; the name is derived from Noble County, Ohio, where typical exposures of the new member occur. The type section is designated as the shale pit of the Ava Brick Company, in the SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 31, Buffalo Twp., Noble County, Ohio. The measured section follows:

Pennsylvanian:	Ft	in
Conemaugh Group:		
Shale, buff, limonitic, thin-bedded, mostly covered, measured to highest float blocks of Ames Limestone -----	13	0
Harlem Coal and Clay: smut and underclay -----		6

Shale, maroon, weathers easily; contains fresh-water limestone nodules which probably represent the Rock Riffle Limestone, partly covered near top	9	0
Noble Limestone:		
Limestone, gray, nodular, thin-bedded, marine, brecciated near top, sparingly fossiliferous, non-persistent		4
Limestone, white to gray, weathers buff; nodular, marine, sparingly fossiliferous; interbedded with green to greenish-gray, dense, calcareous, fossiliferous marine shale	2	3
Clay shale, blue, nonfossiliferous	2	2
Shale, gray, with coal plant remains; probably represents the Upper Bakerstown Coal		3
Clay shale, yellow, finely laminated; may represent the Upper Bakerstown Underclay	1	9
Ewing Limestone: limestone, gray, nodular to thin-bedded, fresh-water, with abundant <i>Spirorbis</i> , small pelecypods, <i>Xenacanthus</i> , and other vertebrate remains; interbedded with mottled maroon shale containing hematite nodules	5	10
Cow Run Sandstone:		
Shale, mottled buff-green, massive; includes calcareous nodule layer with nodules up to 1 foot in diameter	13	0
Shale, mottled blue-brown, thin-bedded, with some calcareous nodules	4	6
Covered interval	20	0
Portersville Limestone and Shale: shale, black, laminated, calcareous, very fossiliferous limestone nodules; grades upward into blue to gray, finely laminated clay shale, sparingly fossiliferous, with nonfossiliferous lenticular limestone nodules; upper contact covered	13	9
Anderson Coal	1	4
Clay shale, gray to buff, slumped and partly covered; scattered limestone nodules near base probably represent the Bloomfield Limestone	6	5
Cambridge Limestone: limestone, mottled, maroon, gray, and green; marine, ferruginous, weathers dark brown		8
Covered interval	2	9

Another section exposing the units between the Ewing Limestone and the Ames Limestone is in south-central sec. 30, Buffalo Twp.

Pennsylvanian:

Conemaugh Group:	Ft	in
Ames Limestone -----	1	3
Shale and covered interval, including Harlem Coal float --	28	7
Noble Limestone: limestone, white, nodular; interbedded in olive clay shale, fossiliferous, marine; thin yellow clay, possibly representing the Upper Bakerstown Underclay, at base -----	1	3
Shale, mottled tan and buff -----	1	1
Shale, variegated, green and maroon, hematite nodules in upper third, carbonaceous near top -----	5	1
Ewing Limestone: limestone, irregularly bedded, fossil- iferous, fresh-water -----	8	3

The area between this section and the type section is very poorly exposed, and the Noble Limestone could not be located. Just north of the place of the second section, however, the interval in which the Noble Member would be expected to occur is occupied by tan, silty shale which contains plant fragments, estherids, and fresh-water pelecypods (*Anthraconaia* cf. *A. arenacea* (Dawson)). The Ewing Limestone is exposed along the road in south-central sec. 19 and along the highway in the SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 24, Buffalo Twp., Noble County, Ohio, but no marine fossils were found in the overlying shales.

The Ewing and Noble Limestones do not seem to be represented in adjoining parts of Spencer Township, Guernsey County, and Noble Township, Noble County, where the interval between the Ames and Portersville Limestones appears to consist for the most part of channel sandstones or channel sandstones and interbedded shales.

The Noble Limestone has been found at only one other locality, in the King Quarry at Florence, 1 mile north of Caldwell, Ohio. A measured section at this locality appears in Denton and others (1961, p. 194, section 11), although the Noble Limestone Member is not noted in this section. The limestone is present, however, at least in the northern portion of the quarry, where it ranges between four and five feet in thickness and consists of the usual fossiliferous, white to gray, nodular limestone interbedded with greenish fossiliferous shale. In an abandoned quarry just southeast of the King Quarry, marine fossils are absent at the top of the Ewing. In new

road cuts due west of the quarry, on the west side of Duck Creek, the Noble Limestone Member is absent.

A faunal list derived from collections made at the Ava Brick Company Shale Pit and the King Quarry is given below. Dr. Richard Hoare, Department of Geology, Bowling Green State University, and Mr. J. J. Burke, Cleveland Museum of Natural History, have been of considerable help in identifying several of the brachiopods and the crinoid material. These collections have been presented to the Cleveland Museum of Natural History.

Species	King Quarry	Ava Shale Pit
Anthozoa:		
<i>Stereostylus amesensis</i> Bebout	x	
Echinodermata:		
<i>Erisocrinus typus</i> (Meek and Worthen)		x
Crinoid fragments	x	x
Bryozoa:		
Unnamed solid ramose fistuliporid (Vide Moore and Dudley, 1944, p. 265)	x	
<i>Polypora</i> cf. <i>P. valida</i> Moore	x	x
<i>Septopora robusta</i> Ulrich	x	
<i>Megacanthopora</i> cf. <i>M. fallacis</i> Moore	x	
Brachiopoda:		
<i>Lingula carbonaria</i> Shumard		x
<i>Trigonoglossa nebrascensis</i> (Meek)		x
<i>Orbiculoidea missouriensis</i> (Shumard)		x
<i>Derbya crassa</i> (Meek and Hayden)	x	
<i>Chonetinella flemingi</i> (Norwood and Pratten)	x	x
<i>C. flemingi alata</i> (Dunbar and Condra)	x	x
<i>C. verneuilliana</i> (Norwood and Pratten)		x
<i>Juresania nebrascensis</i> (Owen)	x	x
<i>Pulchratia ovalis</i> (Dunbar and Condra)	x	x
<i>Antiquatonia portlockianus crassicostratus</i> (Norwood and Pratten)	x	x
<i>Linoproductus prattenianus</i> (Norwood and Pratten)		x
<i>Neospirifer dunbari</i> King	x	x
<i>Punctospirifer kentuckensis amesi</i> Hoare and Sturgeon Ms	x	x
<i>Crurithyris planoconvexa</i> (Shumard)		x
<i>Composita subtilita</i> (Hall)	x	x
Pelecypoda:		
<i>Dunbarella</i> cf. <i>D. striata</i> (Stevens)		x
<i>Acanthopecten carboniferus</i> (Stevens)		x
Cirripedia:		
<i>Trypetesa caveata</i> Tomlinson	x	x

Vertebrata:

Petalodus ohioensis Safford
Deltodus sp.

x x
 x

Certain elements of the Noble Limestone fauna have not been reported previously from Conemaugh beds older than the Ames Limestone. These include the coral *Stereostylus amesensis* Bebout, along with two brachiopods, *Pulchratia ovalis* (Dunbar and Condra) and *Punctospirifer kentuckensis amesi* Hoare and Sturgeon Ms. The unnamed solid fistuliporid bryozoan found in the Noble Limestone is of interest, for the only other large fistuliporids known from the Pennsylvanian of Ohio are specimens of *Cyclotrypa* that occur in the Ames Limestone. The presence of the forms cited above in the Noble Limestone indicates that the Noble fauna is trending toward that of the Ames and is more advanced in that direction than other Lower Conemaugh marine faunas. However, the chonetid brachiopod *Chonetinella*, which is characteristic of other Conemaugh marine limestones underlying the Ames, is common in the Noble fauna. This is in marked contrast with the fauna of the Ames, in which *Neochonetes* is the common and characteristic chonetid.

Unfortunately, present knowledge of the Conemaugh faunas is not refined enough to permit precise correlation of units over wide areas. The Portersville Limestone of Ohio has been correlated with the Woods Run Limestone of western Pennsylvania (Sturgeon and others, 1958, p. 118, 122; Flint, 1965, p. 70-71), but this has been done solely on the basis of its stratigraphic position. Burke (1958, p. 302) described three distinct marine members in the interval between the Cambridge and Ames members: Woods Run proper, the underlying Nadine Member, and the overlying Carnahan Run Shale; as a consequence there is considerable doubt about which particular unit corresponds to the Portersville Member.

The Noble Limestone definitely occurs above the Ewing Limestone, which is known to underlie the coal distinguished in Ohio as the Upper Bakerstown. The horizon of this coal appears to be indicated by smut and underclay underlying the Noble Limestone in the sections given above.

The coal which in western Pennsylvania is regarded as the Upper Bakerstown is found in the vicinity of Bakerstown, Allegheny County, Pennsylvania, and lies 50 to 60 feet below the Ames

Limestone. In the course of recent investigations we have discovered that a marine shale immediately overlies that coal in the vicinity of Bakerstown. The shale, carrying a predominately moluscan fauna, was found at two localities, one just west of the junction of Pennsylvania State Routes 8 and 910, 1.2 miles south of Bakerstown, and the other just east of the toll station at Interchange 4 on the Pennsylvania Turnpike, 2.9 miles south of Bakerstown. The presence of a marine shale overlying the Upper Bakerstown Coal in Pennsylvania, and apparently occupying the same stratigraphic position as the marine Noble Limestone of Ohio, strongly suggests that the two beds are correlative.

Burke (personal communication, September 1967) has found no conclusive evidence that the Upper Bakerstown Coal is present in his area of investigation in the Kiskiminetas Valley, and he is inclined to believe that in that area this coal should occur higher in the stratigraphic section than any of the marine beds underlying the Ames Limestone that he distinguished in 1958.

In summary, the Noble Limestone in Ohio represents a previously unrecognized marine unit that occurs in the interval between the Portersville and the Ames Limestones. However, more field study is required before the relationship of the Noble Limestone to various Conemaugh marine units in Pennsylvania can be determined.

REFERENCES CITED

- Burke, J. J., 1958, New marine horizon in the Conemaugh Formation: *Science*, v. 128, no. 3319, p. 302.
- Denton, G. H., and others, 1961, Pennsylvanian geology of eastern Ohio: *Geol. Soc. America Guidebook for Field Trips, Cincinnati Meeting*, pp. 131-205, 1 pl., 20 figs.
- Flint, N. K., 1965, Geology and mineral resources of southern Somerset County, Pennsylvania: *Pa. Geol. Survey Co. Report C56A*, 267 pp., 13 pl., 55 figs., 15 tables.
- Hoare, R. D. and Sturgeon, M. T., Pennsylvanian Brachiopoda of Ohio: *Ohio Geol. Survey* (in press).
- Moore, R. C., and Dudley, R. M., 1944, Cheilotrypid bryozoans from Pennsylvanian and Permian rocks of the midcontinent region: *State Geol. Survey of Kans. Bull. 52, Rept. of Studies, Pt. 6*, pp. 229-408, pls. 1-48.
- Sturgeon, M. T., and associates, 1958, The geology and mineral resources of Athens County, Ohio: *Ohio Geol. Survey Bull. 67*, 600 pp., 11 pls., 34 figs., 30 tables, maps.

MANUSCRIPT RECEIVED SEPTEMBER 15, 1967